

N-Channel 150-V (D-S) MOSFET

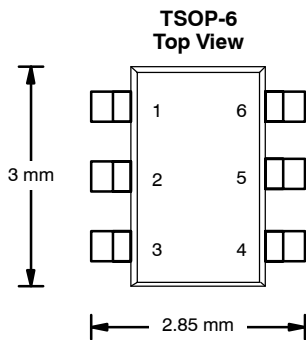
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
150	0.375 @ $V_{GS} = 10$ V	1.5
	0.400 @ $V_{GS} = 6.0$ V	1.4

FEATURES

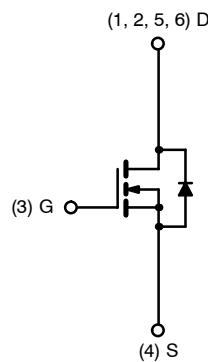
- TrenchFET® Power MOSFET
- PWM Optimized for Fast Switching In Small Footprint
- 100% R_g Tested

APPLICATIONS

- Primary Side Switch for Low Power DC/DC Converters



Ordering Information: Si3440DV-T1—E3



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter	Symbol	5 secs	Steady State	Unit	
Drain-Source Voltage	V_{DS}	150		V	
Gate-Source Voltage	V_{GS}	± 20			
Continuous Drain Current ($T_J = 175^\circ\text{C}$) ^a	I_D	$T_A = 25^\circ\text{C}$	1.5	1.2	A
		$T_A = 85^\circ\text{C}$	1.1	0.8	
Pulsed Drain Current	I_{DM}	6			
Single Avalanche Current	I_{AS}	4		mJ	
Single Avalanche Energy (Duty Cycle $\leq 1\%$)		E_{AS}	0.8		
Continuous Source Current (Diode Conduction) ^a	I_S	1.7	1.0	A	
Maximum Power Dissipation ^a	P_D	$T_A = 25^\circ\text{C}$	2.0	1.14	W
		$T_A = 85^\circ\text{C}$	1.0	0.59	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150		$^\circ\text{C}$	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^a	R_{thJA}	$t \leq 5$ sec	45	62.5	$^\circ\text{C/W}$
		Steady State	90	110	
Maximum Junction-to-Foot (Drain)	R_{thJF}	25	30		

Notes

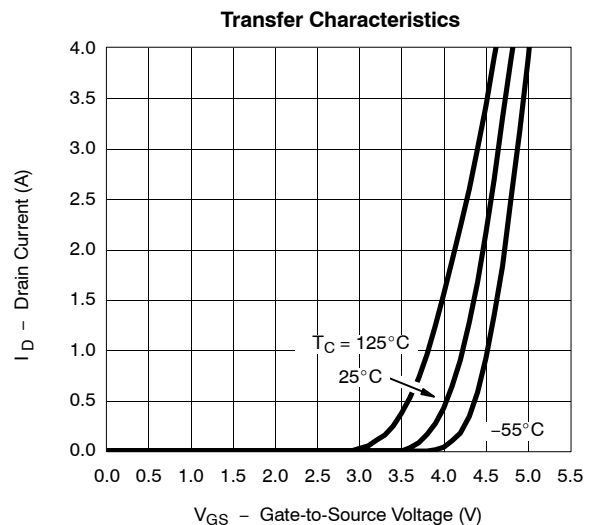
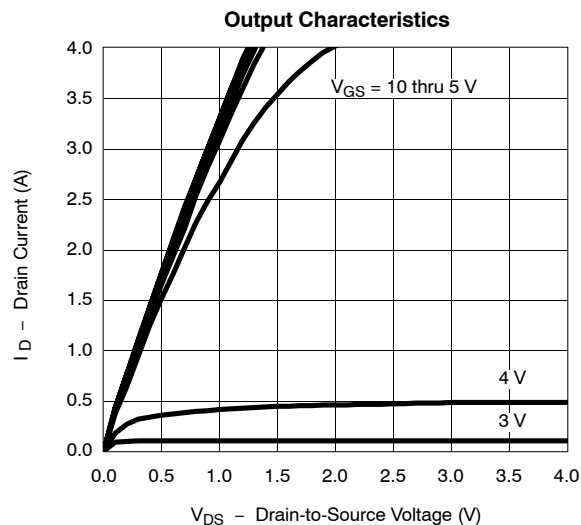
a. Surface Mounted on 1" x 1" FR4 Board.

SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	2		4	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 150 V, V _{GS} = 0 V			1	μA
		V _{DS} = 150 V, V _{GS} = 0 V, T _J = 85 °C			5	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	4			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 1.5 A		0.310	0.375	Ω
		V _{GS} = 6.0 V, I _D = 1.4 A		0.330	0.400	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 1.5 A		4.1		S
Diode Forward Voltage ^a	V _{SD}	I _S = 1.7 A, V _{GS} = 0 V		0.8	1.2	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = 75 V, V _{GS} = 10 V, I _D = 1.5 A		5.4	8	nC
Gate-Source Charge	Q _{gs}			1.1		
Gate-Drain Charge	Q _{gd}			1.9		
Gate Resistance	R _g	f = 1 MHz	4	9	15	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = 75 V, R _L = 75 Ω I _D ≅ 1 A, V _{GEN} = 10 V, R _G = 6 Ω		8	15	ns
Rise Time	t _r			10	15	
Turn-Off Delay Time	t _{d(off)}			20	30	
Fall Time	t _f			15	25	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 1.7 A, di/dt = 100 A/μs		40	60	ns

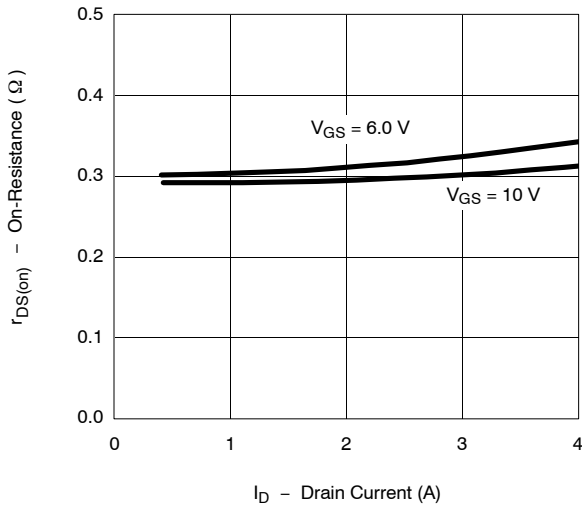
Notes

- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

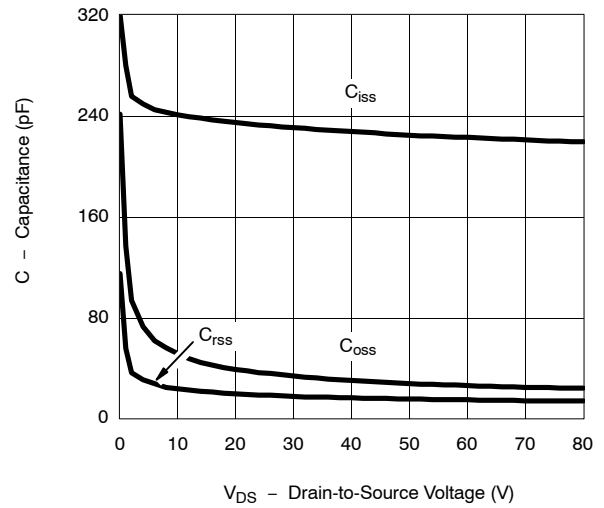
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

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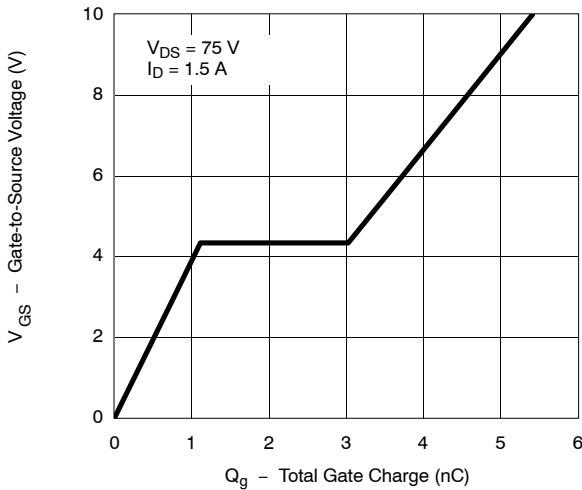
On-Resistance vs. Drain Current



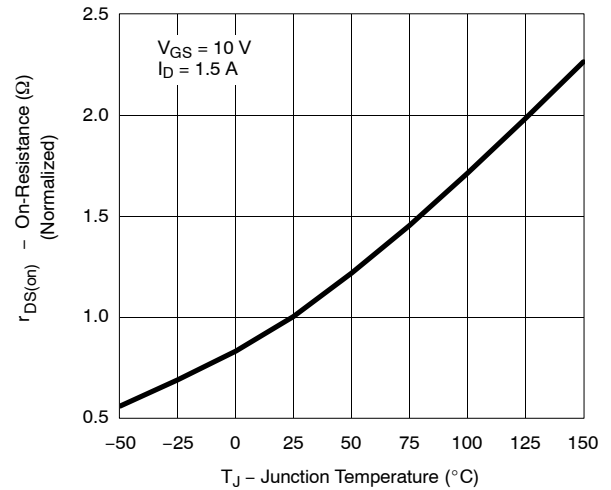
Capacitance



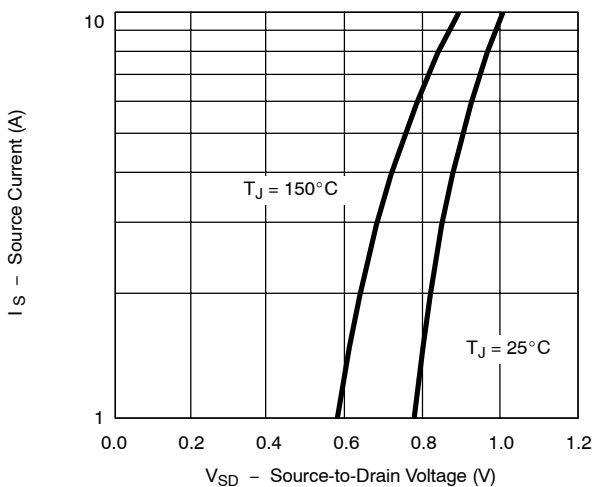
Gate Charge



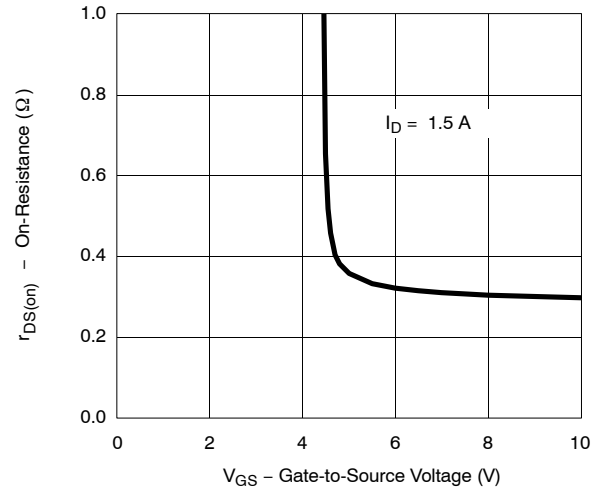
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

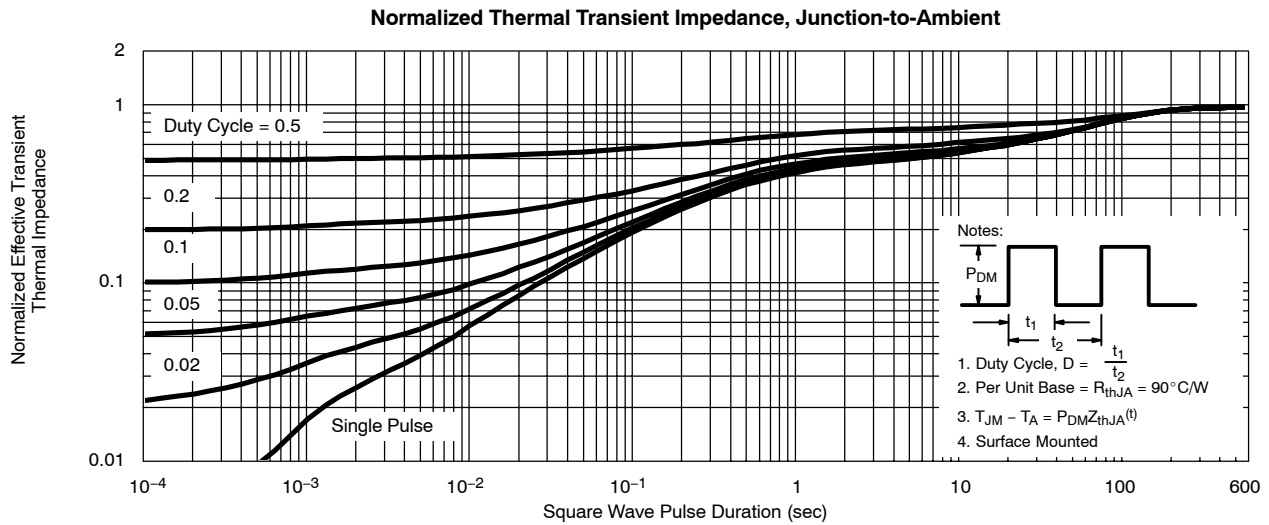
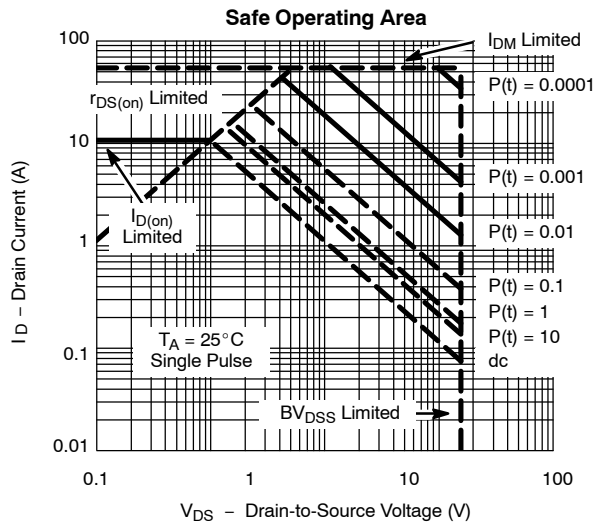
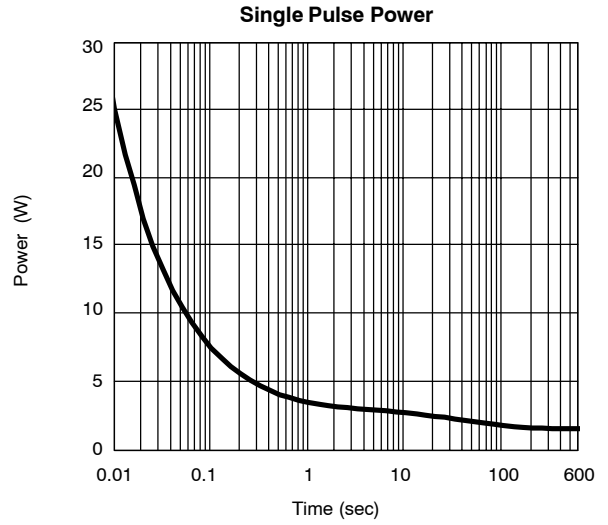
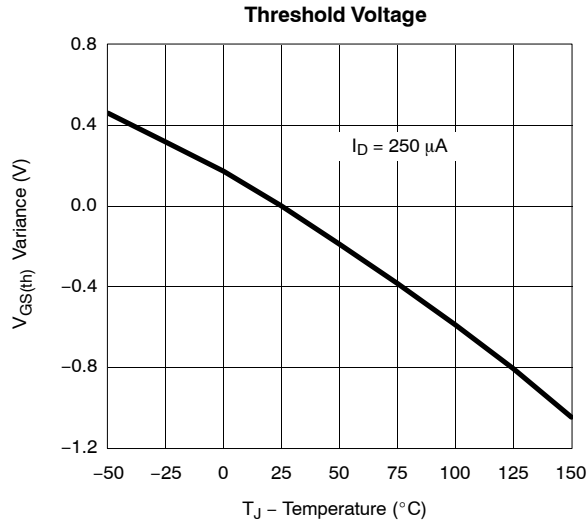


On-Resistance vs. Gate-to-Source Voltage



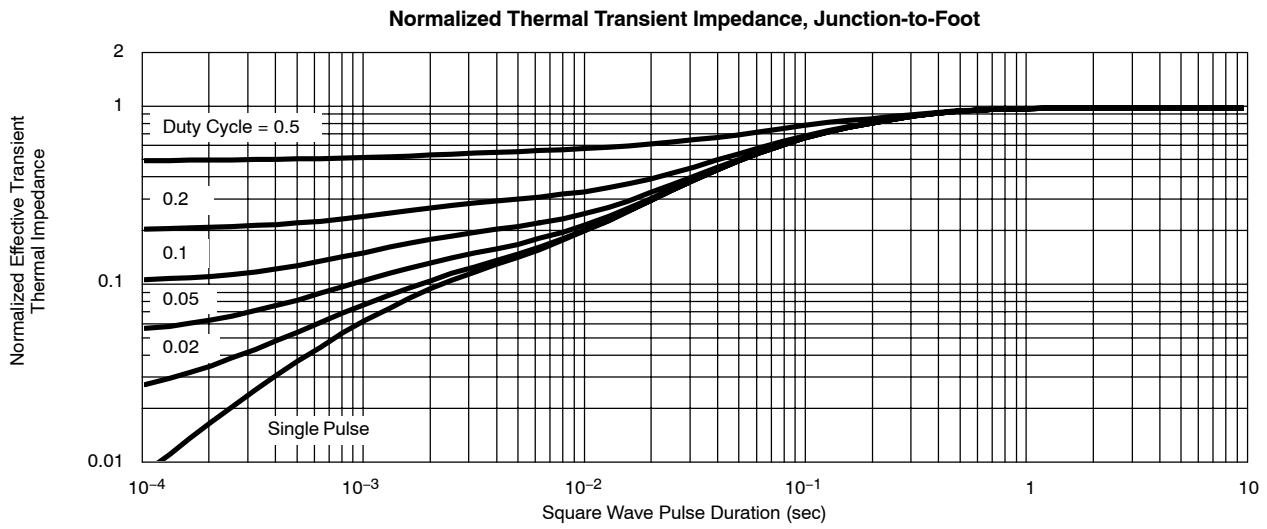


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)





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